

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

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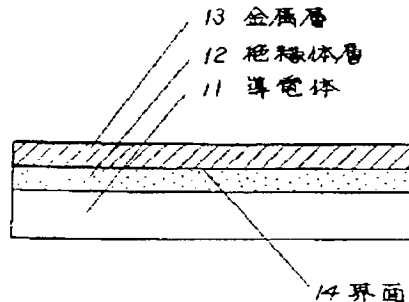
APPLICATION DATE : 19-05-89  
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INVENTOR : TOMII KAORU;

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TITLE : ELECTRON EMITTING ELEMENT



ABSTRACT : PURPOSE: To allow a metal layer to be easily coupled chemically with those of component elements for an insulative substance which tend to be turned into negative ions, by impressing a voltage between the conductor of an electron emitting element and the mentioned metal layer, and thereby releasing electrons having passed through an insulative substance layer due to the tunnel effect to outside of the metal layer.

CONSTITUTION: An insulative substance layer 12 is formed on the conductor 11 of an electron emitting element, and a metal layer 13 is formed on this insulative substance layer 12. This metal layer 13 consists of elements which are easy to be coupled chemically with those of the component elements for the insulative substance layer 12 which tend to be turned into negative ions. Thus the electrons from conductive layer 11 having passed through this insulative substance layer 12 due to the tunnel effect can be released into the vacuum from the metal layer 13 by means of voltage impression from the outside, wherein the metal layer 13 and conductive layer 11 are given positive and negative potentials, respectively. At the interface between the insulative substance layer 12 and metal layer 13, those of the component elements for the insulative substance which were surplus for the coupling and turned into negative ions are coupled with the metal elements.

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